Starshade and the Search for Life

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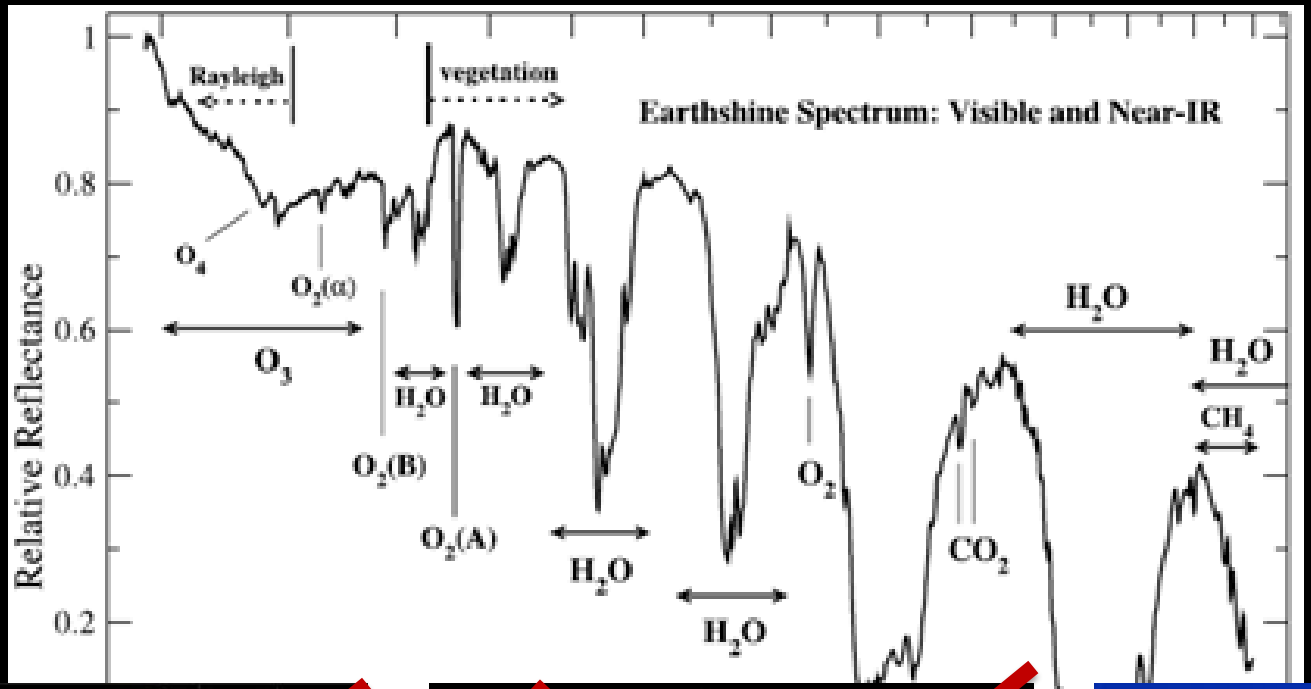
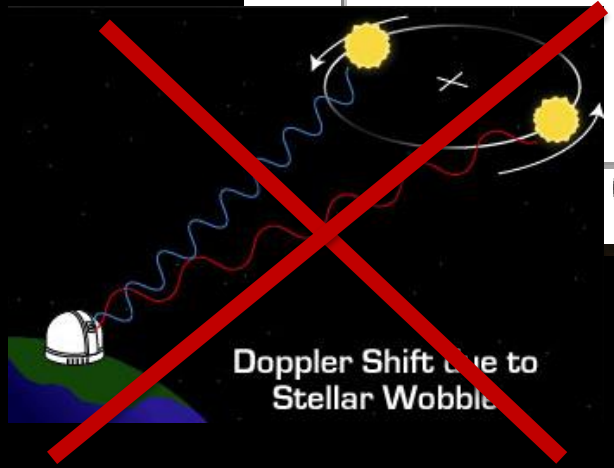
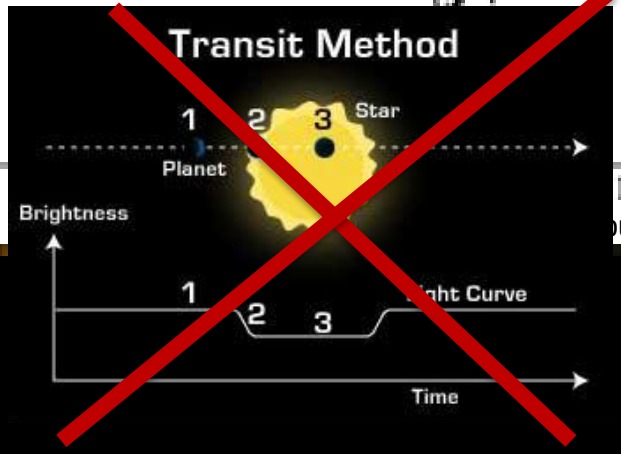
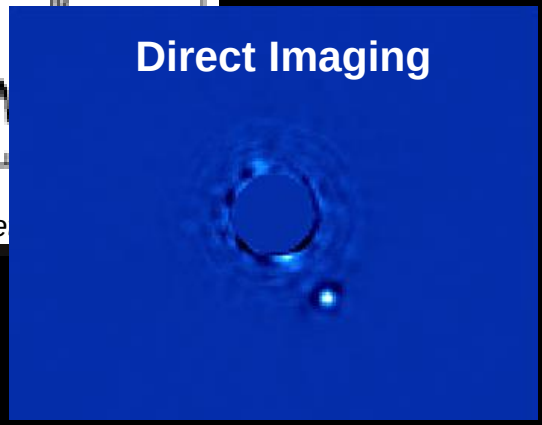
Starlight Suppression

The Key Technology in the Search for Life on Earth-Size Exoplanets



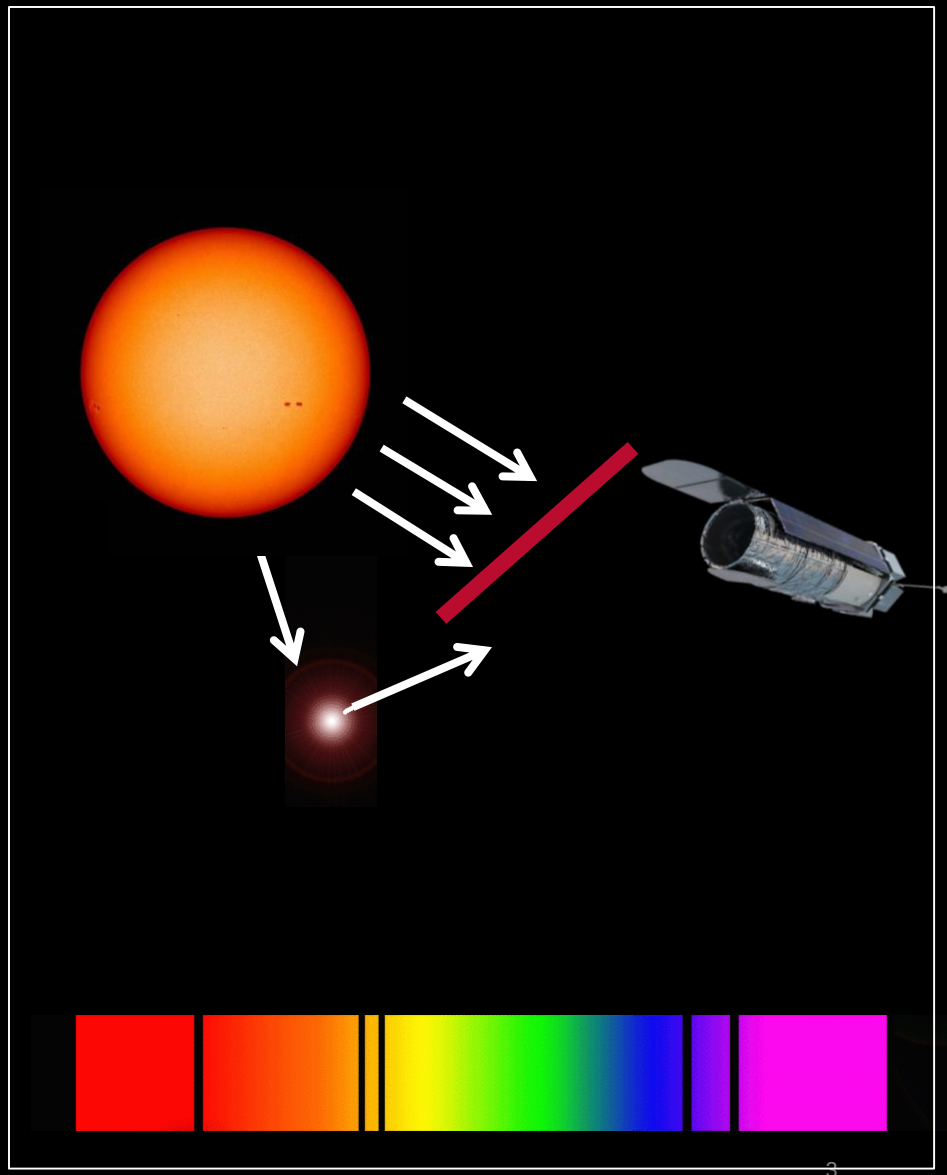






Beta Pic b
Macintosh et al. 2014

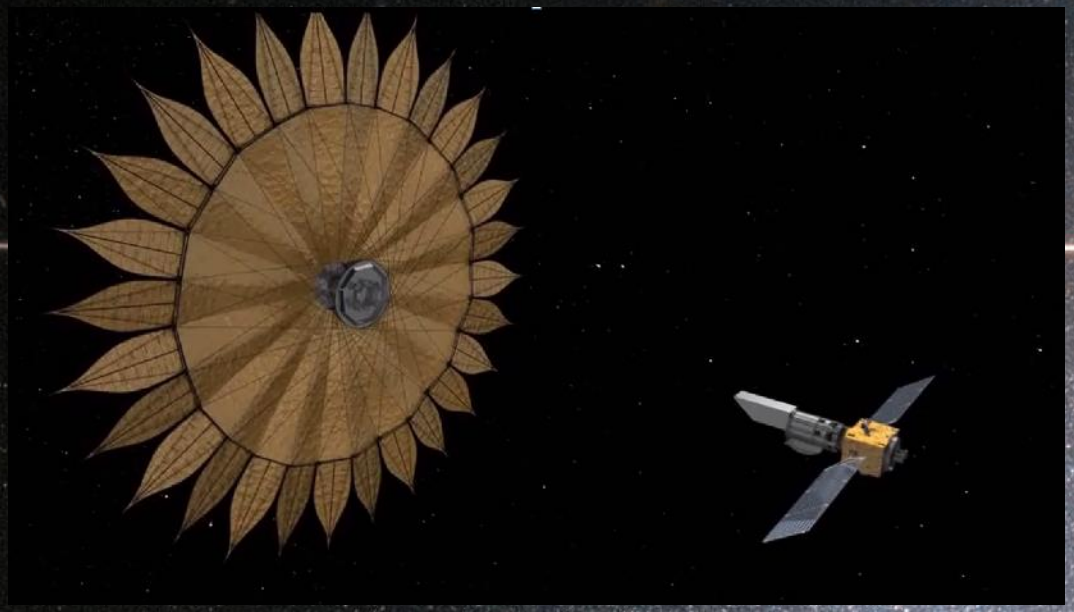
Reflection Spectroscopy

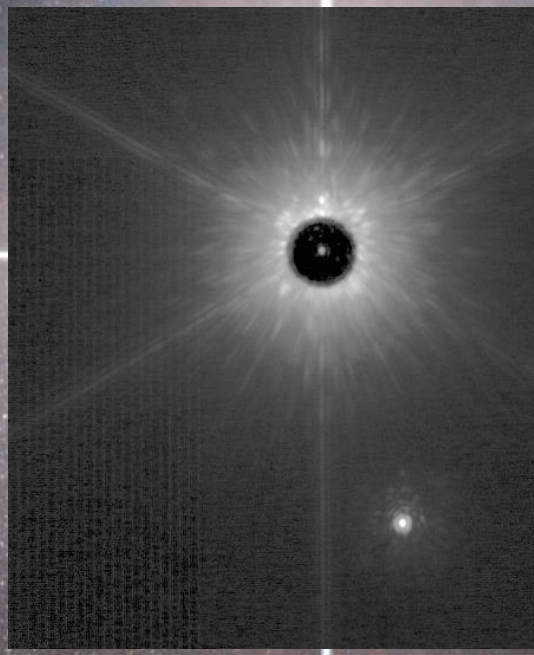


Starlight Suppression

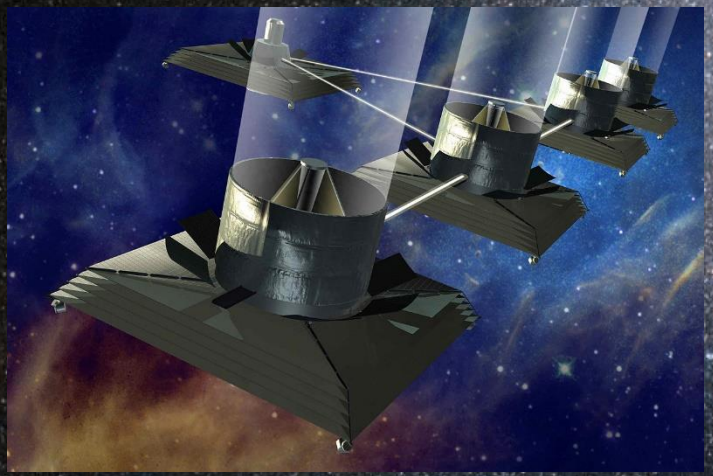
The Key Technology in the Search for Life on Exoplanets

External Occulters (Starshades)

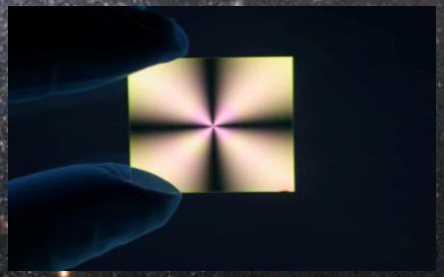




Nulling Interferometry



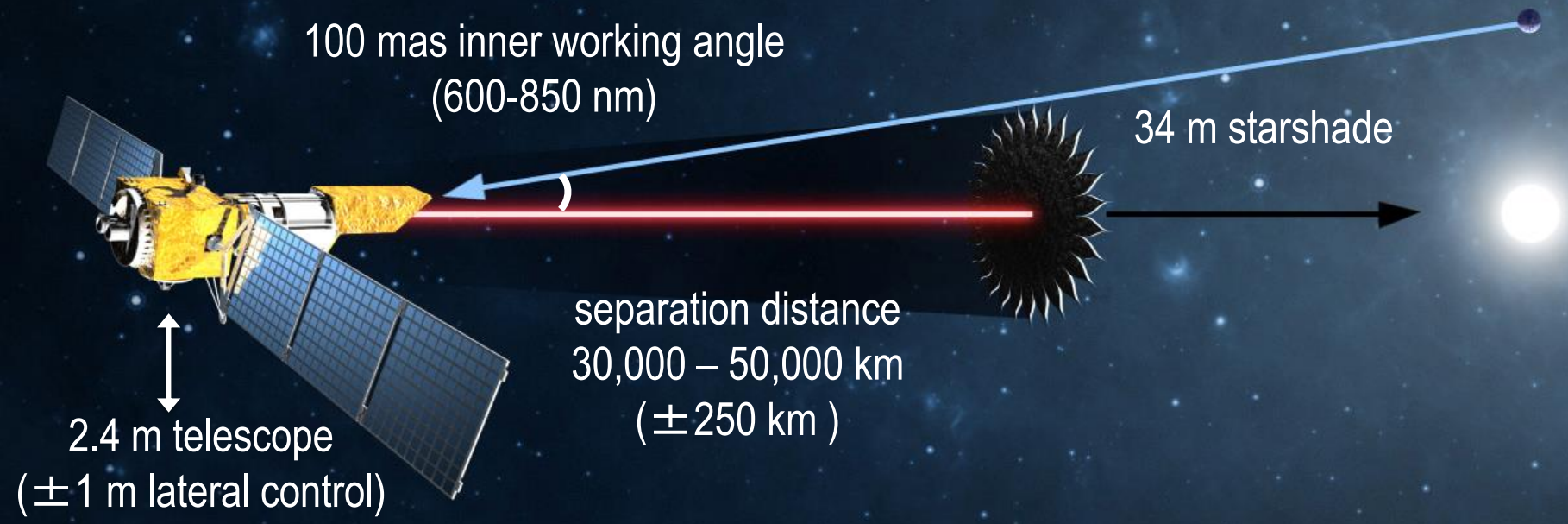
Internal Occulters (Coronagraphs)



A Starshade Mission Concept

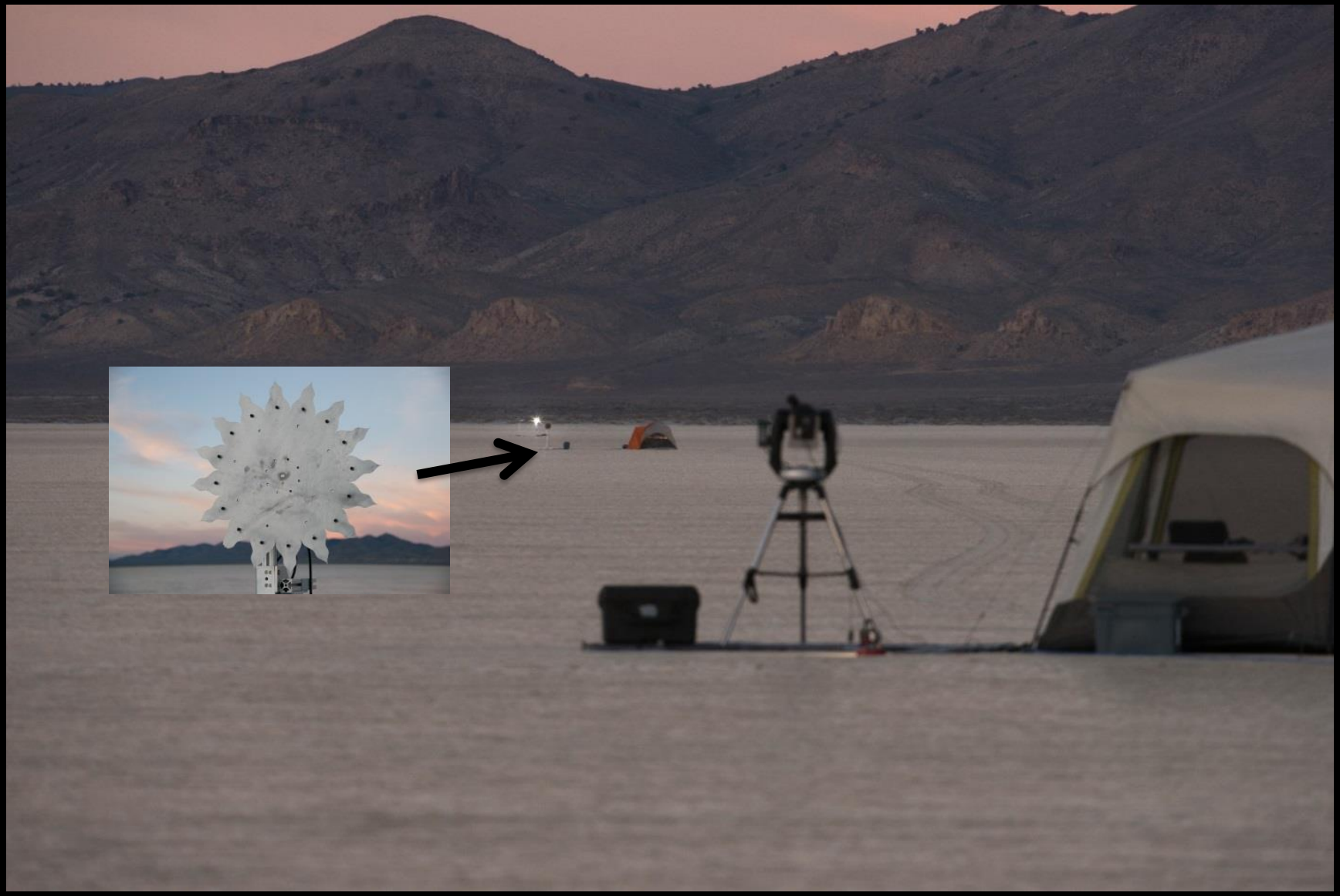
Starshade

The hard stuff is done external to telescope



Optical Performance

Desert Demonstration



Optical Performance

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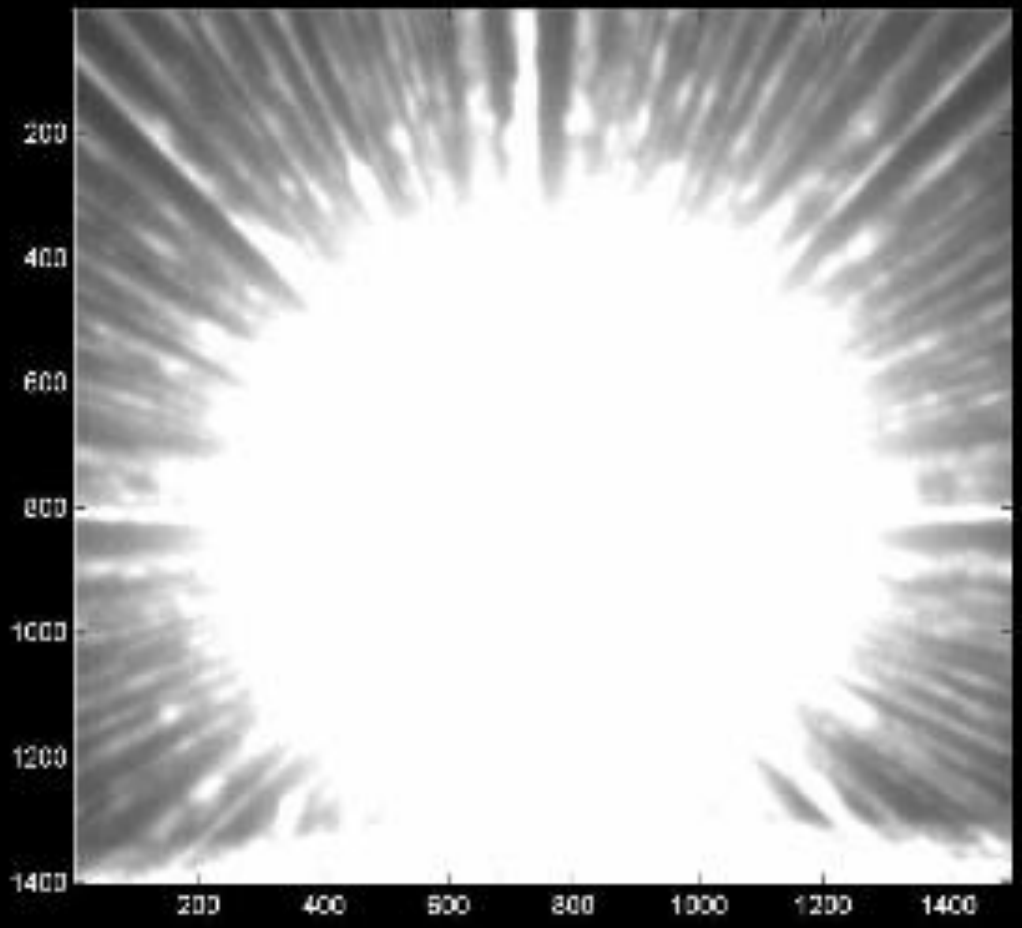

Optical Performance

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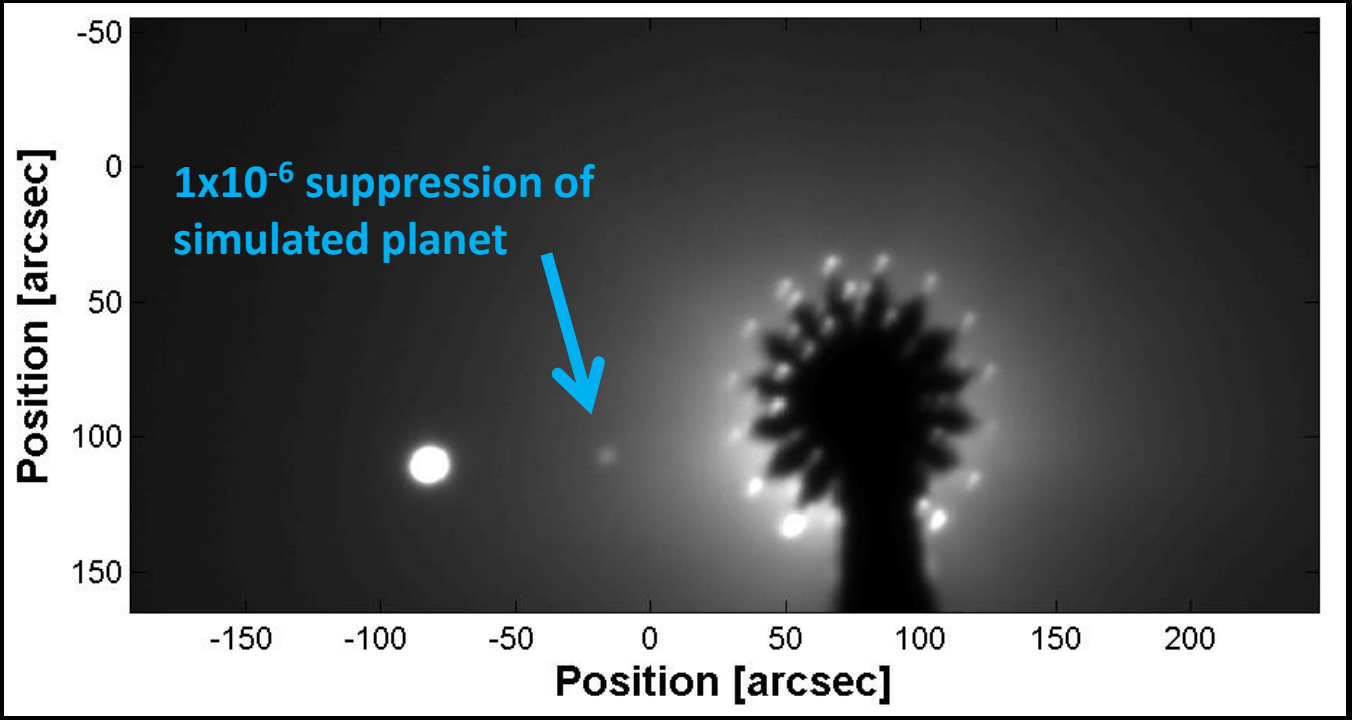
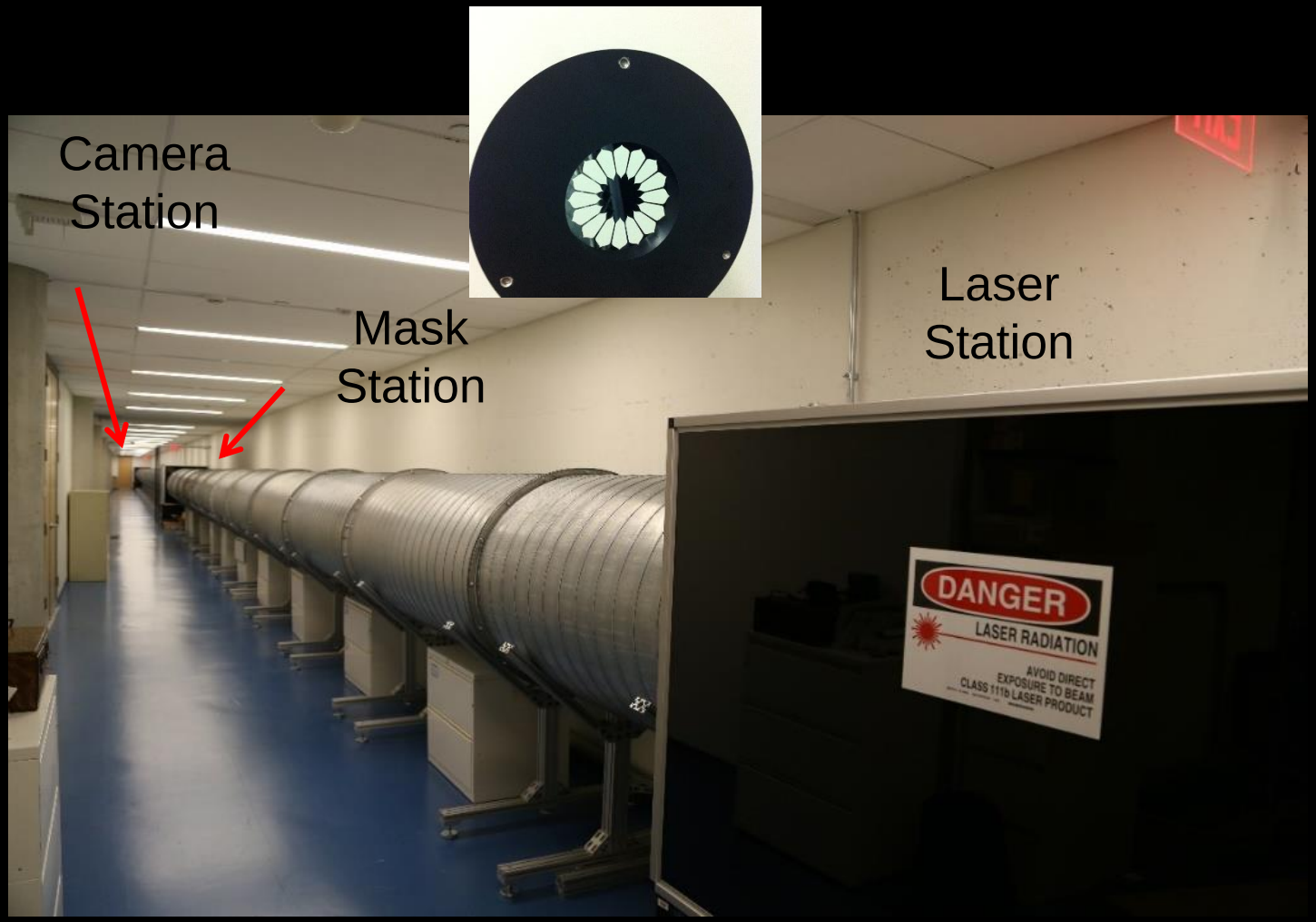


Optical Performance

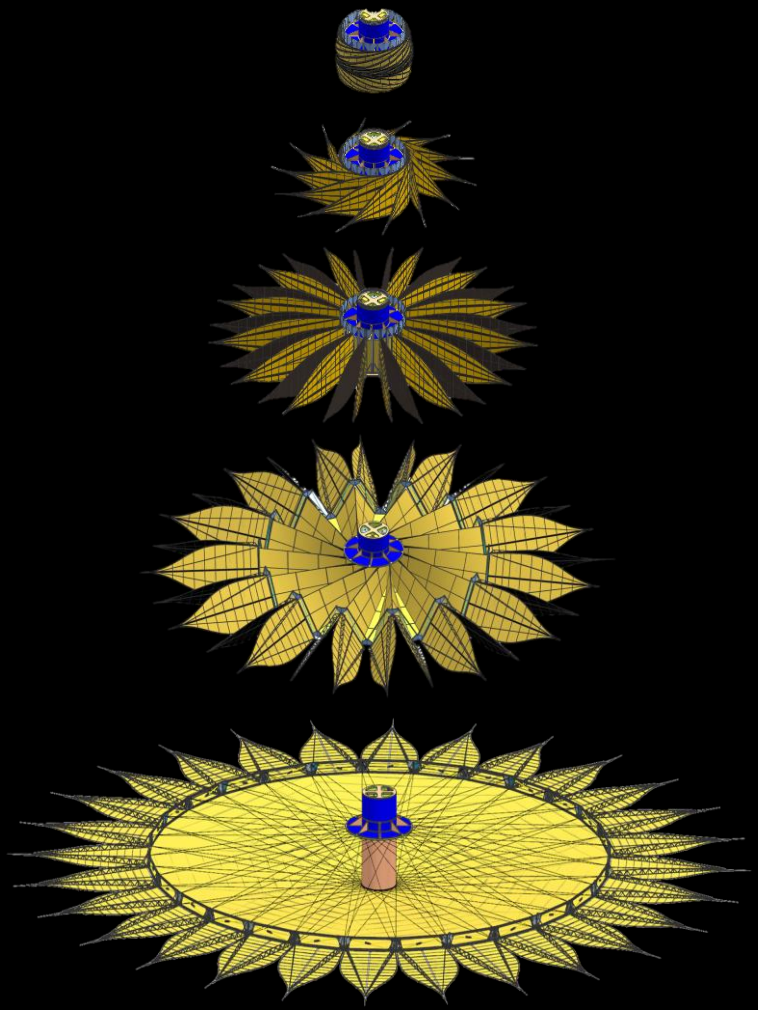
Starshade Testbed at Princeton University



POC Jeremy Kasdin, Anthony Harness
Princeton University

Mechanical Deployment Approaches

Trade Study Underway with Multi-Institutional Working Group

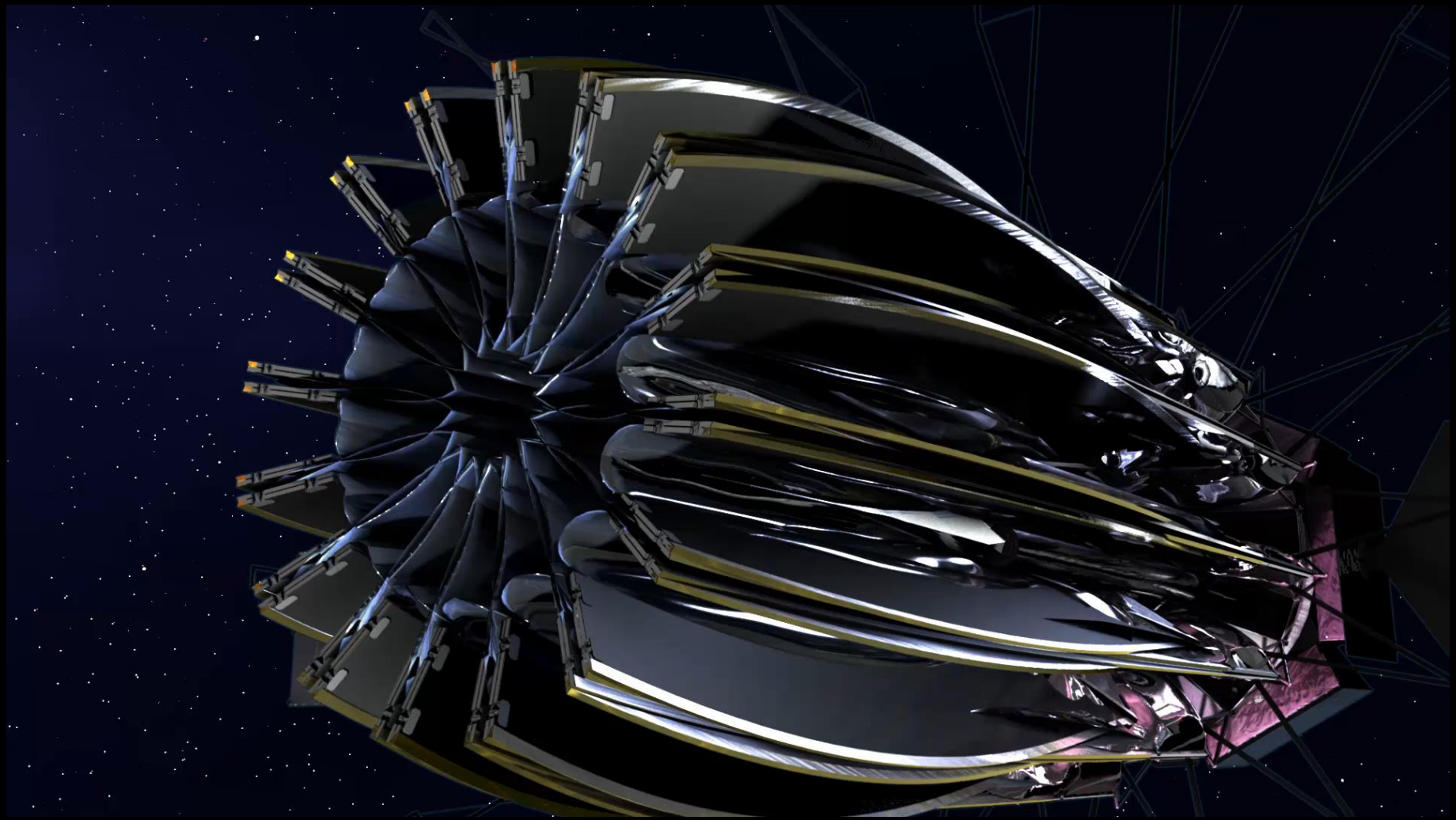


Wrapped Petal Architecture

Folded Petal Architecture

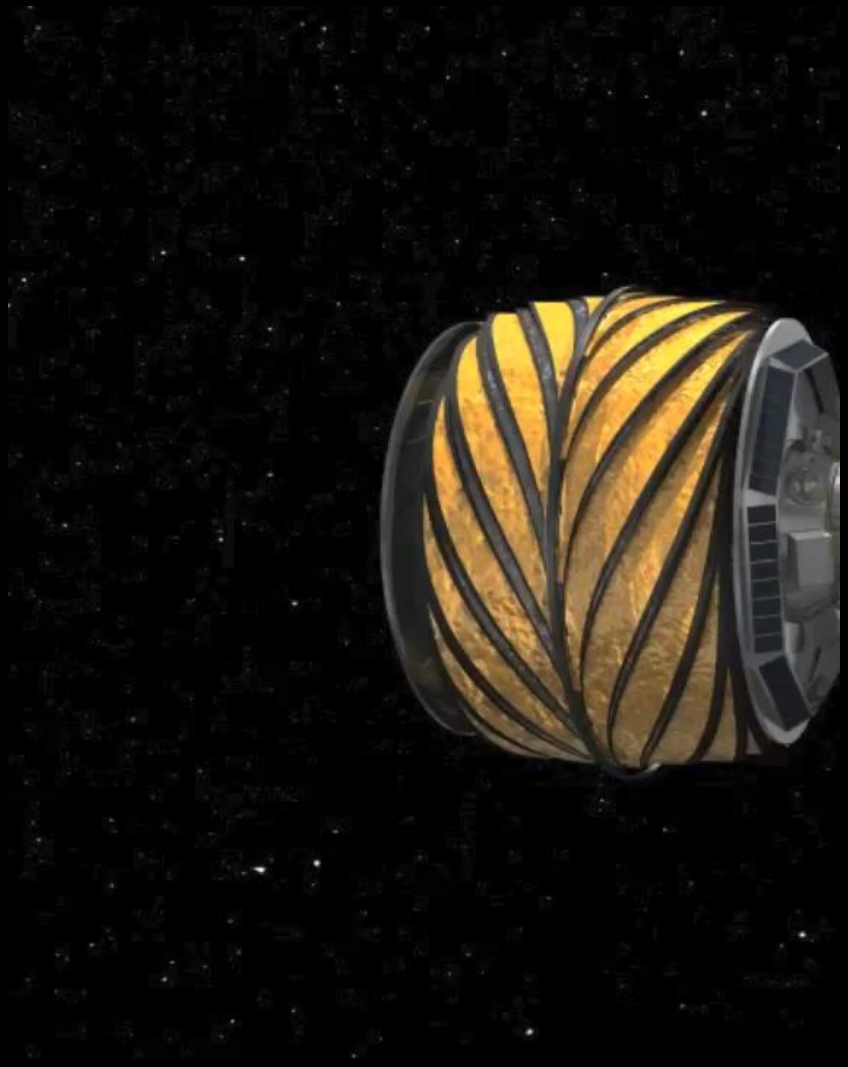
Folded Deployment Architecture

Northrup Grumman Aerospace Systems



Wrapped Petals Unfurling

NASA JPL



Petal Unfurler Testbed 2.0

SBIR Award: Roccor / Tendeg Gravity Offloader

Inner Disk Deployment

10 m Prototype Demonstration (JPL)

NASA/JPL/Caltech

Optical Shield Deployment

1 m Prototype Demonstration

Optical Shield Deployment

2 m Prototype Demonstration

NASA/JPL/Caltech

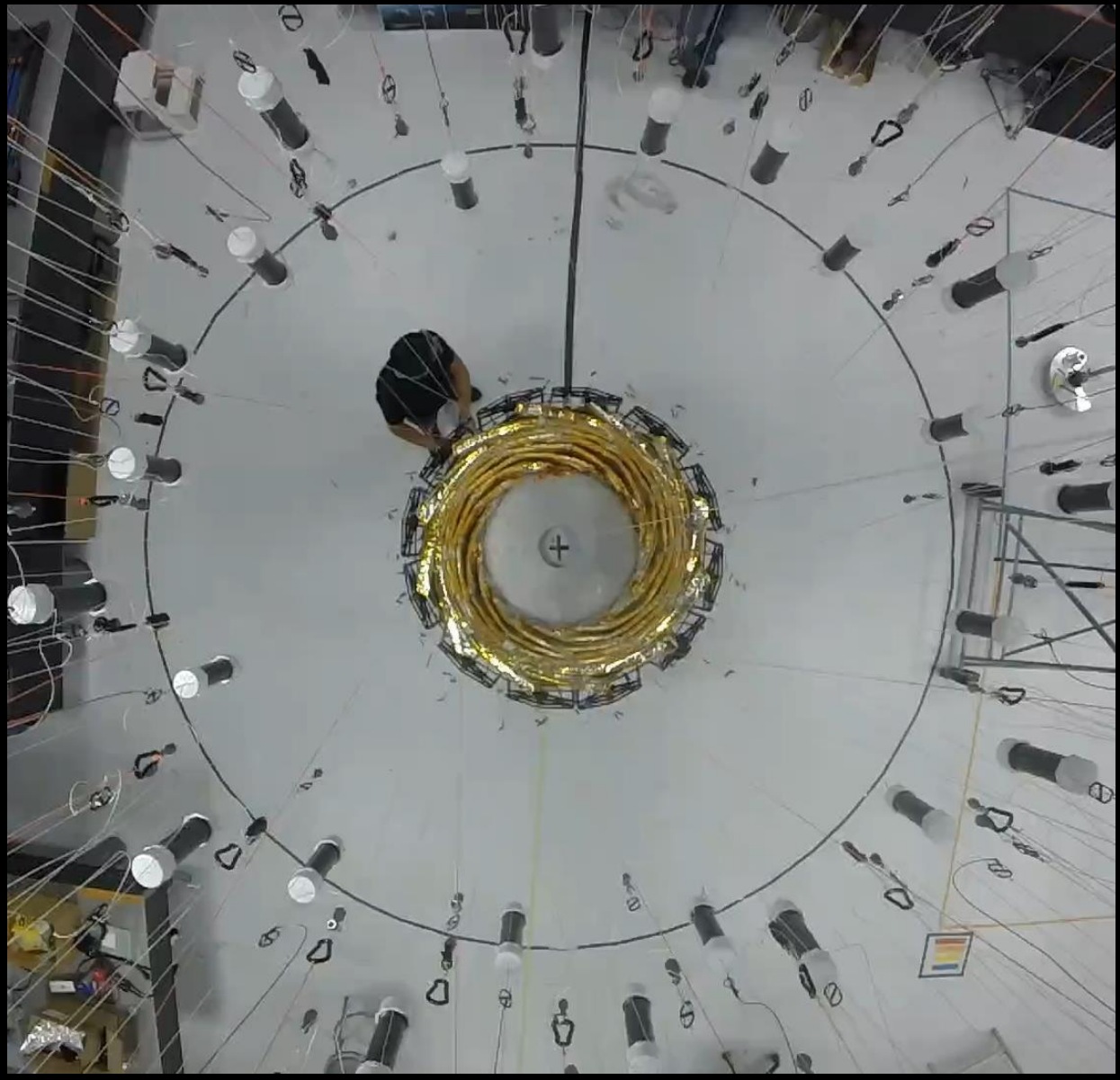
Optical Shield Deployment

5 m Prototype Demonstration

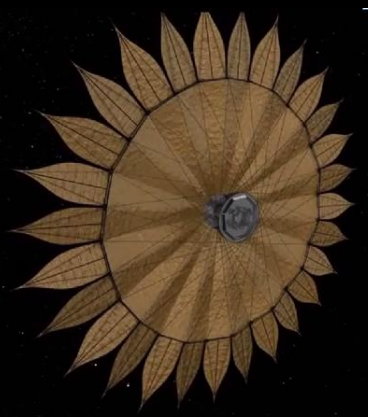
NASA/JPL/Caltech

Optical Shield Deployment

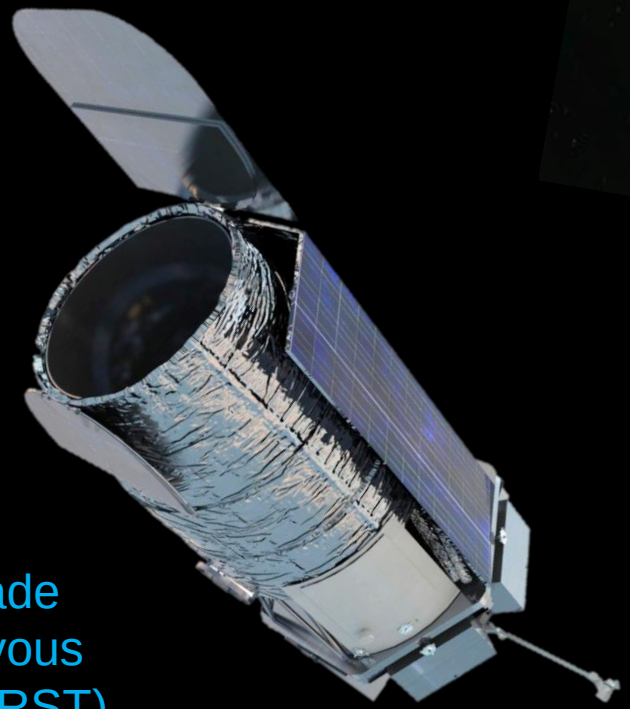
5 m Prototype Demonstration



Possible Future Space Telescopes Using a Starshade



Habitable Exoplanet Imaging Mission (HabEx)



Starshade Rendezvous (with WFIRST)

Decision is pending 2020 Decadal Survey recommendations

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